

# NASA TECH BRIEF

## *Lyndon B. Johnson Space Center*



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

### Frequencies and Modes for Shells of Revolution (FAMSOR)

#### The problem:

A computer program to determine the natural frequency and mode shapes of a shell of revolution was needed.

#### The solution:

A stiffness matrix method is used to determine the necessary frequencies and mode shapes.

#### How it's done:

Using the stiffness matrix generated by SAMMSOR (NASA Tech Brief B73-10444), and a lumped-mass representation developed from the consistent mass matrix generated by SAMMSOR, a specified number of natural frequencies (beginning with the lowest or fundamental frequency) are obtained using the inverse iteration method. The mode shapes for each of the frequencies are also obtained. These frequencies and mode shapes can be found in reasonable periods of computer time utilizing this code.

#### Notes:

1. This program was written in FORTRAN IV for the IBM 360 and the CDC 6000 series computers.
2. Inquiries concerning this program should be directed to:

COSMIC  
University of Georgia  
112 Barrow Hall  
Athens, Georgia 30602  
Reference: MSC-14497

Source: L. B. McWhorter and W. E. Haisler of  
Texas A&M University  
under contract to  
Johnson Space Center  
(MSC-14497)